^{13}B β^-n decay:17.30 ms 1969Jo21,1974Al12

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. H. Kelley, J. E. Purcell and C. G. Sheu	NP A968, 71 (2017)	1-Jan-2017

Parent: ^{13}B: E=0; J^π=3/2$^-$; $T_{1/2}$=17.30 ms *17*; Q(β^-n)=8490.6 *10*; %β^-n decay=0.286 *37*

^{13}B-$T_{1/2}$: From average of (2008ReZZ,1995ReZZ,1988Sa04,1971Wi07,1962Ma19).

^{13}B-Q(β^-n): from (2017Wa10).

1969Jo21: A beam of 3 MeV tritons impinged on a thick ^{11}B target producing ^{13}B nuclei via the ^{11}B(t,p) reaction. The target was irradiated for 3 ms, while counting lasted for 12 ms. The target was surrounded by a 3 inch by 2 inch beta counter scintillator, a 1 inch thick by 8 inch diameter NE102 neutron detector and a 5 inch by 5 inch NAI gamma-ray detector. Neutron energies were determined by time-of-flight between the beta and neutron detectors. population of relatively strong neutron branches from ^{13}C*(7.5,8.86 MeV) were observed. Significantly stronger branches to ^{13}C*(0,3.68 MeV) were deduced from the beta- and beta-gamma spectra (92.1% and 7.6%, respectively).

1974Al12: The experimental setup was similar to (1969Jo21), except a longer neutron flight path was used and higher statistics were obtained. Weaker branches from ^{13}C*(8.86,9.90 MeV) were observed, and an upper limit on decay from ^{13}C*(9.50 MeV) was established.

^{12}C Levels

E(level)†	J^π†
0.0	0^+
4439.82 *21*	2^+

† From Adopted Levels.

$\gamma(^{12}C)$

E_γ	I_γ†	E_i(level)	J^π_i	E_f	J^π_f
4439	0.001	4439.82	2^+	0.0	0^+

† Absolute intensity per 100 decays.

Delayed Neutrons (^{12}C)

E(n)†	E(^{12}C)	I(n)‡	E(^{13}C)
472 *5*	4439.82	≈0.001	9897
2401 *3*	0.0	0.094 *20*	7547
3613 *18*	0.0	0.16 *3*	8860
4203.2 *1*	0.0	<0.01	9500
4570 *5*	0.0	0.022 *7*	9897

† E(n) deduced from Q (2017Wa10) and ^{13}C/^{12}C level energies in ENSDF.

‡ Absolute intensity per 100 decays.

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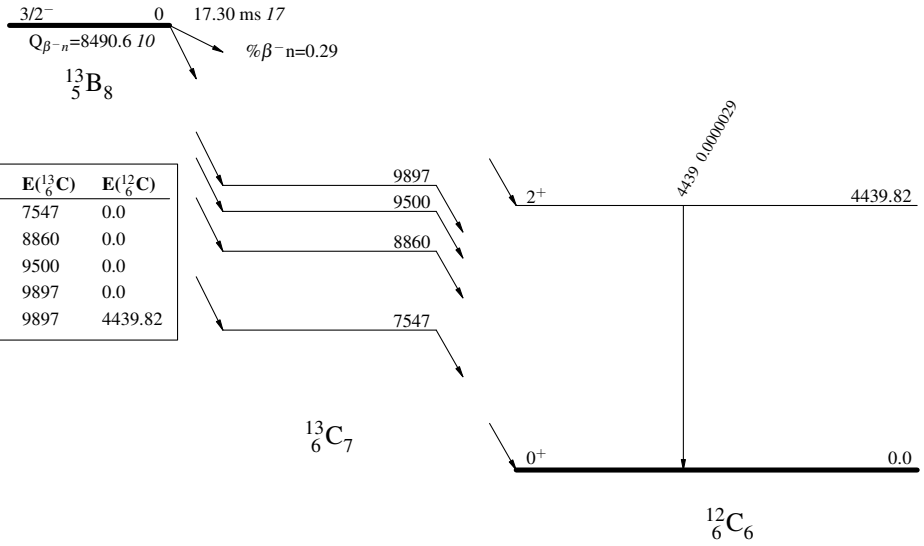
Decay Scheme

γ Intensities: I_γ per 100 parent decays
I(n) Intensities: I(n) per 100 parent decays



E(n)	I(n)	E($^{13}_{6}$C)	E($^{12}_{6}$C)
2401	0.094	7547	0.0
3613	0.16	8860	0.0
4203.2	<0.01	9500	0.0
4570	0.022	9897	0.0
472	≈0.001	9897	4439.82